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## WASHINGTON LETTER.

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WASHINGTON, SEPT. 28, 1895.

The printing and binding of the final volumes of the Census of 1890 has been stopped at the Government Printing Office on account of insufficient appropriations. This will occasion a further delay of fully six months in the completion of a work already five years out of date. Of the twenty-five volumes contemplated only nine have been distributed, while eight more have been completed but not distributed. The "copy" for three important volumes, viz.: Population, Part 2, Vital Statistics, Part 1, and Compendium, Part 3, is not yet completed.

By a happy accident some of the most experienced clerks in the Census service have been transferred to permanent positions in the Departments, so that their skill and experience can be brought into requisition in the future. It was not contemplated by the act abolishing the Census Office (which office had not been under Civil Service regulations) and providing for a Division only in the Department of the Interior, that any change in the status of the employees of the Census Office relative to the Civil Service should take place. But as the Census Office was abolished, and provision made for the establishment of a Census Division, the Civil Service Commission very properly decided that the new Division must be subject to all the rules and regulations governing other divisions of the Secretary's office. As the act abolishing the Census Office took effect on the 4th of March, 1895, and the Census Division was brought into service on that day, it was decided by the Civil Service Commission that the employees in the Census Division should be considered as within the classified service and subject to transfer the same as employees in offices over which the civil-service law has been extended by Executive order.

The Report of the National Museum for 1893, prepared under the direction of Dr. G. Brown Goode, and recently published, presents a programme of varied and interesting attractions.

We have (1) Dr. Goode's account of the organization, scope and development of the Museum; recent advances in museum methods; review of the work of the scientific departments of the Museum, including their participation in the World's Columbian Exposition.

(2) Papers by specialists describing and illustrating collections in the Museum.

The National Museum now contains over three million objects, one-fifth of which relate to ethnology and prehistoric anthropology.

Among acquisitions of wide celebrity are the Catlin Indian gallery, of inestimable value to the American historian, ethnologist and geographer; the Baird collection of North American vertebrates; the Isaac Lea collection of 20,000 conchological specimens, besides minerals and other objects; the Bendire and Ralph collections of American birds' eggs; the Lacoe collection of fossil plants; the collection of the American Institute of Mining Engineers; a valuable collection of ethnological objects collected in Tibet by W. W. Rockhill; the Japanese gold lacquers, bronzes, porcelains, carvings in ivory and wood, gathered by the late Gen. Horace Capron while U. S. Minister to Japan; the Riley collection of North American insects—about 150,000 specimens; the personal relics of Washington, Franklin, Jefferson and General Grant,—the latter deposited by the late W. H. Vanderbilt.

The late Prof. Baird was once asked whether the value of the collections in the Museum was equal to the amount expended in its maintenance. He replied unhesitatingly that he did not doubt that the entire sum could be recovered.

The ethnological collections are particularly complete for North America, and are becoming fairly representative of the whole world. Prof. Otis T. Mason has long been engaged in bringing these vast materials under control, so that any object with its full history can be consulted without delay, by means of a card catalogue.

The collection of prehistoric anthropology—one of the largest and most impressive in the Museum—is arranged in two series: (1), a synoptical series, with reference to prehistoric man; (2), a geographical series, in which the greater portion of the collection is arranged with reference to political subdivisions. An interesting collection has been received from Mrs. Schliemann, consisting of prehistoric antiquities gathered by her husband, lately deceased, during his excavations on the hill of Hissarlik on the site of ancient Troy.

The papers accompanying this report include:

Notes on the Ethnology of Tibet, by W. W. Rockhill.

Two Persepolitan casts in the U. S. National Museum, by Cyrus Adler.

Museum collections to illustrate religious history and ceremonials, by Cyrus Adler.

If Public Libraries, why not Public Museums?, by E. S. Morse.

Congress by a Joint Resolution in 1892 opened all the literary and scientific collections in Washington for the use of students, with the definitely avowed purpose of encouraging the establishment and endowment of institutions of learning at the National Capital. After a preamble, the resolution recites:

That the facilities for research and illustration in the following and any other Governmental collections now existing or hereafter to be established in the City of Washington, for the promotion of knowledge, shall be accessible, under such rules and restrictions as the officers in charge of each collection may prescribe, subject to such authority as is now or may hereafter be permitted by law, to the scientific investigators and to students of any institution of higher education now incorporated or hereafter to be incorporated under the laws of Congress or of the District of Columbia, to wit: the

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| Library of Congress, | Department of Agriculture, |
| National Museum,     | Fish Commission,           |
| Patent Office,       | Botanic Gardens,           |
| Bureau of Education, | Coast and Geodetic Survey, |
| Bureau of Ethnology, | Geological Survey,         |
| Army Medical Museum, | Naval Observatory.         |

NOTE: The Smithsonian Institution being a private endowment, is not subject to Congressional regulation.

The Report of the Commission to the Columbian Historical Exposition in Madrid has lately been printed. The Commission consisted originally of Rear-Admiral S. B. Luce, James C. Welling and Dr. G. Brown Goode.

The Spanish Government provided a series of international celebrations in commemoration of the fourth centenary of the Discovery of America. Most prominent among these were two historical expositions to be held in Madrid simultaneously and in adjacent buildings,—one the *Exposicion Historico-Americana*, and the other the *Exposicion Historico-Europea*. The Historic American Exposition was intended to illustrate the civilization of the new continent in the Pre-Columbian, Columbian and Post-Columbian periods. The Historic European Exposition was intended to illustrate the period during which American history was most closely identified with that of Europe, viz., from 1492 to 1620.

Dr. Walter Hough of the National Museum, who accompanied the Commissioners, says the display was the greatest collection of Americana ever under one roof. It was in many respects one of the most noteworthy international expositions ever held, although from its very nature it appealed more to the scholar than to the general public, and therefore, as far as popular attendance and financial outcome were concerned, was not noteworthy.

Besides the United States Government, all the Latin-American Republics were liberally represented. There were also collections from numerous private sources. The total number of objects presented reached nearly two hundred thousand.

Mr. William E. Curtis is authority for the statement that, although the Exposition was intended to be exclusively historical and to commemorate the discovery of America by Christopher Columbus by a nation whose greatest glory is in his achievements, both the man and the event were practically ignored by Spain, and all the other nations participating, with the exception of the United States. The building was crowded with a magnificent and remarkable display of articles illustrating the art, the industry, the piety, the martial conquests, and the luxury of the reign of Ferdinand and Isabella. The archives of the government, the museums and libraries, the cathedrals, churches and monasteries, the public and private palaces of the Peninsula were stripped of their treasures to form an exhibition that was never surpassed in the extent and value of its historical features; but the only articles contributed by Spain that related directly or indirectly to Columbus were the following:

1. An autograph letter from Juan Colona, the notarial secretary of Ferdinand and Isabella, to Friar Boil, the priest who accompanied Columbus on his second voyage.
2. A certified copy, made in 1545, of the will of Diego Colon, son of Columbus.
3. A copy of the letter written to the Catholic sovereigns by Columbus after his wreck in 1503.
4. The original memorial of Don Luis Colon, grandson of Columbus, demanding the rights to which he was entitled under the contract made by the sovereigns with his grandfather.
5. Several medals.

The seventy-seven portraits of Columbus contributed by Mr. Curtis included the originals or copies of all that had been painted or published of any historical interest or artistic value up to January, 1892, and proved to be one of the most valued features of the Exposition. None were authentic. It was distinctly stated in the catalogue that there was no evidence that the features of Columbus were ever painted or engraved by any one during his life, and that the date of the earliest picture that pretended to represent him was six years later than his death.

When the Division of Ornithology and Mammalogy of the Department of Agriculture several years ago instituted a study of the

geographic distribution of life in North America, the transcontinental or zonary character of the principal life areas was not recognized, and the laws governing distribution were unknown. Zoölogists and botanists had always worked independently. The maps each had published differed radically, and no agreement could be found between the two series. \*

The first biological survey by Dr. Merriam, in 1889, established the important facts that the same laws govern the distribution of both animals and plants, and that the resulting areas of distribution are essentially coincident. It showed also that the life areas of North America and the Northern Hemisphere as a whole take the form of a definite number of circumpolar or transcontinental belts, and that these belts or zones naturally arrange themselves in two principal categories or regions—a northern or Boreal, and a southern, or Austral.

In this year Congress was urged to enlarge the scope of this work, so that the Division might carry on a systematic survey. The request was acceded to, and the task of mapping the distribution of species and ascertaining the boundaries of the natural life zones was given greater prominence, and has since been pushed as rapidly as the means at hand permitted.

In 1890 a biological reconnoissance was made of south-central Idaho. In the report of this expedition † the courses of the several zones were described and the characteristic species of animals and plants enumerated.

In 1891 the most comprehensive and thorough biological survey ever undertaken was made by the Division. The expedition, which came to be known as the Death Valley Expedition, had for its field of operation an area embracing 100,000 square miles, stretching from the Pacific coast to the 113th meridian, and from latitude 34° to 38°. This area, embracing the highest and lowest lands within the United States—from Death Valley, nearly 500 feet below the level of the sea, to the peaks of the high Sierra—was selected because of the exceptional advantages it offered for studying the distribution of animals and plants in relation to the effects of temperature and humidity at different altitudes.

This expedition determined the distinctive species of each zone, traced the courses of the several zones from California to the Colorado plateau, and made large collections of specimens. The results

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\* Dr. C. Hart Merriam, on the geographic distribution of animals and plants in North America; in *Year Book of the Dep't of Agriculture*, 1894.

† *North American Fauna*, No. 5.

fill three volumes, two of which have been published; \* the third has not yet gone to press.

In 1892 the northern boundary of the Lower Sonoran zone was traced from New Mexico eastward across Texas, Indian Territory, and Arkansas, to the Mississippi; and in the same year Dr. Merriam published an essay on "The geographic distribution of life in North America with special reference to the mammalia." Tables of distinctive species were published, and the actual tortuous courses of zones were shown on a colored map.

In 1893 a biological reconnoissance was made of Wyoming, a large part of which was found to be from 1,000 to 3,000 feet lower than represented on current maps, and consequently to have a warmer climate than was supposed. Other work was done on the Great Plains in Kansas, Nebraska, and the Dakotas, and also in Utah and on the table-land of Mexico.

In 1894 a biological reconnoissance was made of the larger part of Montana. Other work was done in South Dakota and Arizona.

The work accomplished by the Division, Dr. Merriam says, may be summarized as follows: "The continent of North America has been divided into three primary life regions—Boreal, Austral, and Tropical—each of transcontinental extent. Their boundaries are sinuous, conforming to the distribution of temperature. The *Boreal* region stretches from Nova Scotia and Newfoundland westward to the Pacific, and from northern New England and the Great Lakes northward to the pole and southward over the principal mountains of the United States and Mexico. It is subdivided into three principal belts or zones—Arctic, Hudsonian, and Canadian. The *Austral* region is likewise subdivided into three zones—Transition, Upper Austral, and Lower Austral. The *Tropical* region comprises Central America, the greater part of the coastal lowlands of Mexico, and the Antilles. There are three points of it in the United States—southern Florida, the lower Rio Grande region in Texas and the valley of the lower Colorado River."

Dr. Merriam believes that the principles controlling the geographic distribution of terrestrial animals and plants have been discovered, and that they may be expressed as follows:

"In *northward* distribution terrestrial animals and plants are restricted by the sum of the positive temperatures for the entire season of growth and reproduction."

"In the *southward* distribution they are restricted by the mean

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\* *North American Fauna*, No. 7, 1893; and *Contributions from the U. S. National Herbarium*, Vol. 4, 1893.

temperature of a brief period during the hottest part of the year. It is believed that these two principles cover the fundamental facts of distribution."

Mr. W. C. Hodgkins, who represented the Coast Survey in the adjustment of the boundary line between Pennsylvania and Delaware, has written an historical account of that long-pending controversy. It accompanies the detailed account of technical operations in connection with the recent resurvey of the line.\*

This boundary controversy extends over more than two centuries. It originated in a compact between Penn and Lord Baltimore in 1681, whereby it was agreed that the southern boundary of Pennsylvania should follow a circular curve at twelve miles distance from Newcastle, northward and westward from the Delaware River until it came to the 40th parallel; and that it should then follow that parallel westward to its limit of longitude. As a matter of fact, the most northern part of a circle of twelve miles radius from Newcastle court-house is almost exactly on the parallel of  $39^{\circ} 50'$  north latitude, and it could therefore never intersect the parallel of  $40^{\circ}$ .

The Penn charter contains the first mention of this singular boundary line, almost unique in its circular shape.

After granting the charter the King commanded Penn and Lord Baltimore to "arrange" their boundary. Accordingly, Lord Baltimore met Penn's deputy at Upland, when it was found that the 40th parallel was several miles north of Upland instead of being somewhat to the south of it, as formerly supposed. Lord Baltimore at once claimed the land to his charter limit of 40 degrees, wherever it might lie. Markham, the deputy, declined to proceed with the delimitation of the provinces and reported to Penn.

With varying efforts for settlement the disagreements continued year after year. Penn died in 1718, leaving the dispute to his heirs.

The matter dragged along until 1732, when the heirs of Penn and the Lord Baltimore of that day joined in a deed to settle their boundaries. An apparent agreement was reached, when difficulties and disputes arose as to carrying out upon the ground the provisions of the deed. For instance, the question as to the proper point in Newcastle which should be taken for the centre of the 12-mile circle occasioned long debate. Lord Baltimore's friends insisted on the absurd theory that the "12 miles" meant the

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\* Appendix No. 8, Coast Survey Report, 1893.

periphery of the circle, while the Penns, of course, claimed that length of radius. A dispute also arose as to the true location of Cape Henlopen. In consequence of these and other difficulties nothing was done to carry out the deed.

In 1760 another deed was executed by the interested parties, in which the designated boundary was substantially the same as that of 1732. Commissioners were appointed on each side to supervise the work of demarcation. After three years of labor, and no solution reached, Messrs. Mason and Dixon, surveyors, were engaged to assist the commissioners, and they did so assist for the next four years.

While not without errors, as pointed out by Col. J. D. Graham 80 years later, the lines of Mason and Dixon were marked with suitable and enduring monuments.

When the proprietary governments were swept away by the Revolution, and the connection between Pennsylvania and the "three lower counties" became broken, the disaffected portion became the State of Delaware. The boundary between Pennsylvania and the new State of Delaware reverted to the old circular line.

In 1849 and 1850, Col. J. D. Graham of the U. S. Topographical Engineers superintended a revision of a portion of Mason and Dixon's work.

This re-survey was due to the following circumstances: The monument which had been placed in 1768 at the northeastern corner of Maryland disappeared from its place. The absence of this stone and the uncertainty as to the significance of others in the neighborhood combined with rumors of the unauthorized moving of some of the monuments produced a general feeling of doubt in regard to the northeastern boundary of Maryland, and led to the appointment of a joint commission composed of one representative from each of the three States—Pennsylvania, Maryland and Delaware.

The details of Col. Graham's operations are quite fully described in his report subsequently published by each of the three States.

Notwithstanding the fact that apparently erroneous conclusions as to the true point of junction of the three States, and as to the proper location of the circular boundary were embodied in a map which received the signatures of the three commissioners, the results were generally accepted on paper, while ignored in fact. No subsequent act of ratification seems to have been passed by the State Legislatures.

The increasing importance of the boundary as the country grew in population and wealth led to a renewed agitation of the question forty years later. In 1889 the Legislatures of Delaware and Pennsylvania passed acts authorizing commissioners to examine, survey and re-establish the boundary line between the two States. A few years later (1892) the joint commission applied to the Superintendent of the Coast Survey for assistance in the matter and the detail of an officer to execute the field work.

The new line, now marked by 46 substantial monuments, it appears reasonable to suppose, will remain the boundary.

*A Geological reconnaissance across Idaho, by George H. Eldridge.* This is an advance extract from the Sixteenth Annual Report of the U. S. Geological Survey. It is accompanied by a general map of Idaho and by five sketch maps of mining districts. The general map was compiled from the atlas sheets of the Survey, the maps of the General Land Office, and a rough sketch map of Lemhi County prepared by Mr. Birdseye, of Salmon City. The reconnaissance was on a northeast line through Boise and Salmon City, and was authorized as a preliminary to the future geological study of the State.

Idaho is full of great topographic features. The Snake Plains cut by the river to the depth of 400 to 1,000 feet constitute one of the prominent features of the State, and indeed of the West. They extend completely across the southern end of Idaho, and are elevated from two to five thousand feet.

The portion of Idaho lying north of the Snake Plains is an intricate region of lofty mountains and deep canyons. The altitude of the mountains varies between 6,000 and 12,000 feet, while 3,000 to 4,000 feet is a common depth for the canyons, many of which are quite impassable.

The Snake River, whose waters are derived in part from the Continental Divide in the vicinity of the Yellowstone Park, constitutes with its tributaries the drainage channel of nearly the whole of Idaho. It forms a third of the western boundary of the State.

Evidences of early glaciers are observed at many points along the route of this reconnaissance, and it is probable that their existence was quite general throughout the mountain region of Idaho. Indeed—Mr. Eldridge says—nearly all the valleys traversed show at their heads more or less evidence of former glaciers.

As implied in the title, the work is chiefly descriptive of the geologic formations and mining districts of Idaho. In a concluding paragraph, however, the writer says as to agricultural possibilities, that but little area is available for farming in comparison with that

of many other Western States. The valleys are few, but very fertile. Fruits in one locality or another attain remarkable perfection, but the area for large farming operations is at present small.

In the Proceedings of the Geodetic Conference of 1894, lately published by the Coast Survey,\* Mr. J. E. McGrath gives an account of the recent extraordinary growth of the but partially explored country of Alaska, the extent and wealth of the forests, fisheries, mines, furs, etc.

Mr. McGrath was engaged for two years and over on the survey of the yet undetermined boundary line between Alaska and British Columbia.

The committee on Alaska of the Geodetic Conference recommends a topographical reconnoissance of the great inland water passages of southeastern Alaska, in order to supply needed topographic features of the hydrographic survey now quite completed. The committee also asserts that the demands of the whaling and fishing fleets, and of naval, shipping and trading vessels, require that the passes through the fog-covered line of islands of the Aleutian group, now imperfectly laid down on existing maps, should be better determined. That the great industries centred about Kadiak and the western end of the Aleutian peninsula make a survey of this section only second in importance to the one just mentioned. That a survey should be made of the mouth of the Yukon—the Mississippi River of this vast territory—now practically useless on account of almost complete ignorance of the channels and waterways through its delta. This would open up a ready means of entrance into the heart of Alaska. The river gets into St. Michael's Harbor by passing over, literally overflowing the continuous sand-bars that seek to shut up the river, the overflow skirting the western Alaskan coast for about eighty miles. No direct practicable channel to the ocean has been discovered. For some six or eight hundred miles up, the river averages from one to ten miles in width, and is very deep. It would be navigable for ocean steamers if there were any way of getting over the sand-bars at the mouth. The next eight hundred miles average about one and a half miles in width.

It has been asserted that during the period from the time of the purchase of Alaska, in 1867, to 1890, an estimate of the value of products shipped hence is about ten and a half times the price paid for it. The Census of 1890 and the annual reports of the Governor are the latest and only official sources of information for Alaskan statistics.

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\* Appendix No. 9, Report for 1893.

Summarizing the Alaskan work of the Coast Survey it may be said that in the year of purchase—1867—Mr. Seward arranged for a geographical reconnoissance, from which the first Coast Pilot of southeastern Alaska was compiled. This work included only the more important points from Dixon Entrance to Unalaska. In 1871, '72, '73 and '74 nothing of importance was accomplished; but in 1882 a trigonometric and hydrographic reconnoissance of the inland waters of southeastern Alaska was commenced which, with the exception of one year, has been continued to the present time.

In 1892 the longitude of Sitka was determined, and during that and succeeding years four other points for the international boundary work. The Coast Survey charts of Alaskan waters now number forty-two.

When it was found to be impossible at the last session of Congress to pass through the House the bill which had already passed the Senate to aid in the construction of the Nicaragua Canal, an amendment was attached to the Sundry Civil Expenses bill, appropriating \$20,000, and constituting a board of engineers to make a survey and examination for the purpose of ascertaining the feasibility, permanence, and cost of the construction and completion of the canal by the route contemplated in the Senate bill. The Board, appointed by the President of the United States, consisted of Maj. William Ludlow, Corps of Engineers, U. S. A., Commander M. T. Endicott, U. S. N., and Alfred Noble, civilian.

It was directed to visit and personally inspect the route, examine and consider the plans, profiles, sections, prisms, and specifications for its various parts, and report to the President; and should it ascertain that any deviation from the general line of the proposed route is desirable it should so state in the findings and conclusions. The Board was required to make its report before November 1st, 1895.

The report of the Board will not be made public until it is sent to Congress. It is stated, however, that the conclusions are favorable to the present general plan of the canal with some deviation of details and increased estimates as to cost.

Under enactments made by the Legislature of Massachusetts in 1893 and 1894, that State has a highway commission composed of three competent persons, who have power to decide what roads in the Commonwealth on the application of county commissioners, or mayor and aldermen of cities or selectmen of a town, shall be laid out, constructed and kept in repair at the expense of the State, and known as State roads. The sum of \$300,000 was appropriated in 1894 to make the act effective.

This enactment grew out of popular agitation, and demands for good roads, and was based on the investigations of a prior commission appointed to inquire into the entire subject.

A curious incident in connection with the outset of the work of this commission was the fact that in this late year of grace it could obtain but little data (so it is said) from any published reports as to methods and cost of construction and maintenance of roads. So, it set about acquiring the information through public hearings, communications with town officials and personal investigation. As a result, the demands of the people and the purposes of the Legislature are now being carried out under the scientific supervision of a permanent Board. All work is done according to specifications and plans furnished by the commission, the engineer in chief having charge.

The Assembly of the State of New York at its last session passed an act to provide for the construction of roads by local assessment, County, and State aid. It was not reached in the Senate, and did not become a law. The proposed act was based upon the effective State-aid law of New Jersey, modified and improved in some details, and is probably the best development of the State-aid plan of road construction. The bill provided that one-third of the total cost of construction or improvement must be paid by the owners of the land and property benefited; one-third by the County, and the remaining one-third by the State. When completed, such roads become County roads, and are then maintained at County expense.

In New Jersey, the State pays one-third the cost of construction of new highways, the adjoining property-owners ten per cent., and the County the balance, and maintains the road. Two of the leading roads are extended half way across the State, and, as it so happens, they are leading directly towards two very popular sea-side resorts. New Jersey was the first State in the Union that ever paid money under a law granting State aid for the construction of public roads. The provisions of the law, and the manner in which it has been enforced have proved satisfactory to the people of the localities where the improvements are located and to others who have witnessed the practical benefits arising therefrom. The rapidity with which this sentiment has increased is apparent in the demands from more than half the counties of the State, from which applications now on file represent enough miles of road seeking recognition under the law to absorb the present annual State allowance for two years in advance.\*

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\* Edward Burrough of N. J., in Bulletin No. 9, Office of Road Inquiry, Dept. of Agriculture.

The want of material available for good road-making is not infrequently a serious obstacle in some localities. Much valuable information on this point has been supplied by officials of various railway companies in certain States north of the Ohio River, in reply to a circular of inquiry sent out by the U. S. Office of Road Inquiry, asking railroad managers for information in regard to the supply of good road materials, accessibility, reduced rates of transportation, etc., along their respective lines.\*

In a little treatise entitled "Phototopography as practiced in Italy and in the Dominion of Canada," Mr. J. A. Flemer, of the Coast Survey, gives a short review of the more important photographic surveys, and of some of the publications on photogrammetry and phototopography, as well as a concise description of the general methods and principles of phototopography as practiced in Europe and in the Dominion of Canada, in order, he says, that this branch of surveying may become more generally known, tested, and amplified in this country.

The term phototopography should be generally adopted for all topographic surveys based on perspective views of the terrene obtained by means of the camera.

Concerning the topographic survey of the United States, Mr. Flemer says the land is so diversified and the population so unevenly distributed that the methods to be employed should also be diversified; the character and value of the different sections should govern the accuracy and amounts of detail of the survey in order to reach the quickest practically useful and valuable results. Minute and detailed methods, with ensuing accurate results, should be applied to cities and all closely settled regions, to the coast, larger rivers, and lakes, and the work should be platted on a large scale. Arid, barren, and mountainous regions, as well as prairies and swamp lands, should be more generalized in their cartographic representations, and platted on a small scale. He cites the new survey of Italy in demonstration, where phototopography has reached a high state of perfection under the auspices of the Military Geographical Institute. At present, he says, phototopography cannot replace instrumental topography; still, experience in Italy, France, Canada, Austria and Germany has proved it to be a very valuable adjunct to the plane table and transit for topographic surveys of rugged mountainous regions, if they are not too much wooded. H.

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\* Bulletin No. 6; Office of Road Inquiry.